PC COM 8 PORT RS-232/RS-422 CARD USER MANUAL

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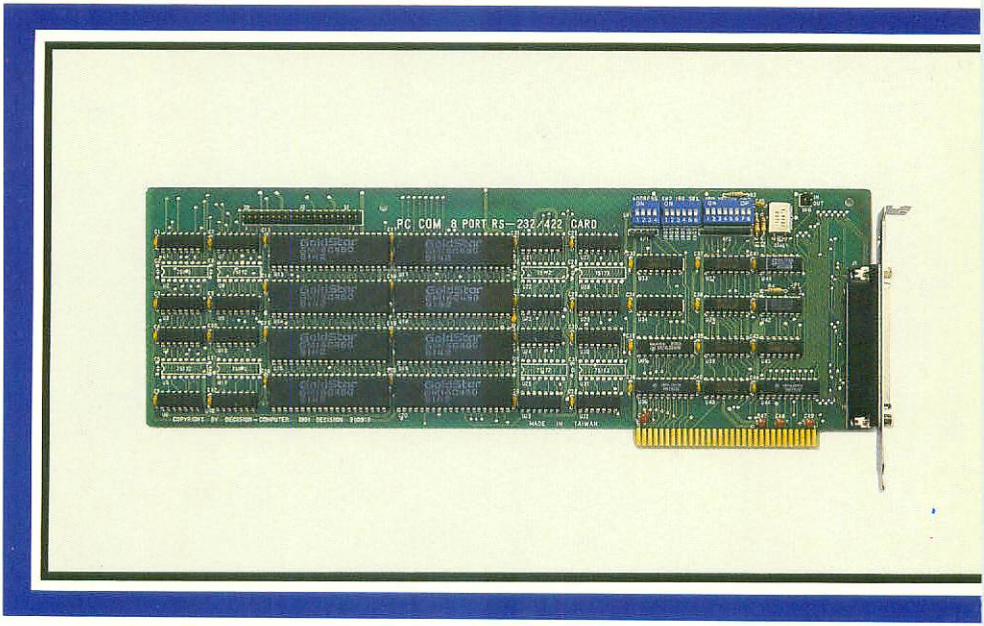

PC COM® USER MANUAL
8 PORT SERIAL ADAPTER

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CHAPTER 1 INTRODUCTION

The PC COM 8 port serial adapter provides eight asynchronous serial communication ports (RS232C), which link the computer and serial peripheral devices such as modems, serial printers, plotters, etc.

The PC COM 8 port adapter is particularly suited to facilitate the connection of terminals (VDUs) in multi-user operating systems. Each board is supplied complete with cables and an expansion box containing eight female D25 sockets, or RJ11 connectors without the expansion box.

The PC COM board may be installed in any IBM PC/XT, PC/AT, PC/386 or hardware compatible system. To accommodate a variety of operating systems three switch banks permit maximum flexibility of configuration. You may select which interrupt (IRQ2 - IRQ7), I/O address, and interrupt vector you desire.

CHAPTER 2 UNPACKING INFORMATION

Check that your PC COM package includes the following items:

* PC COM 8 port adapter.

* User manual.

* PC COM software.

* One of following cables:

  PCCOM-8-B kit
  Expansion box and cables.

  PCCOM-8-RJ kit
  Eight RJ-11 connectors.

  PCCOM-8-DB kit
  DB37 cables.

* Warranty form.

CHAPTER 3 SYSTEM REQUIREMENTS

Before installing your PC COM 8 port adapter, make sure that:

* The host computer is an IBM PC/XT, PC/AT, PC/386 or compatible.

* The three switch banks are correctly configured to coincide with the operating system you are using.

* The operating system you intend to use is capable of driving multiple serial ports.

CHAPTER 4 HARDWARE INSTALLATION

Your PC COM 8 port adapter is designed to be inserted in any available slot in your PC/XT, PC/AT, PC/386 or compatible. In order to gain access to the expansion slots, follow the steps listed below:

1. Turn off all power to your computer and all peripheral devices before installing your PC COM 8 port adapter.

2. Remove the cover of the computer.

3. Insert the preconfigured PC COM 8 port adapter into any available slot. Make sure the adapter is firmly seated in the chosen slot.

4. Replace the cover of the computer.

5. Connect cables to either the RJ11 or D25 connectors as required.

CHAPTER 5 SWITCH SETTINGS

5.1 Introduction

The three switch blocks on the PC COM 8 port adapter must be configured correctly in accordance with the operating system you are using.

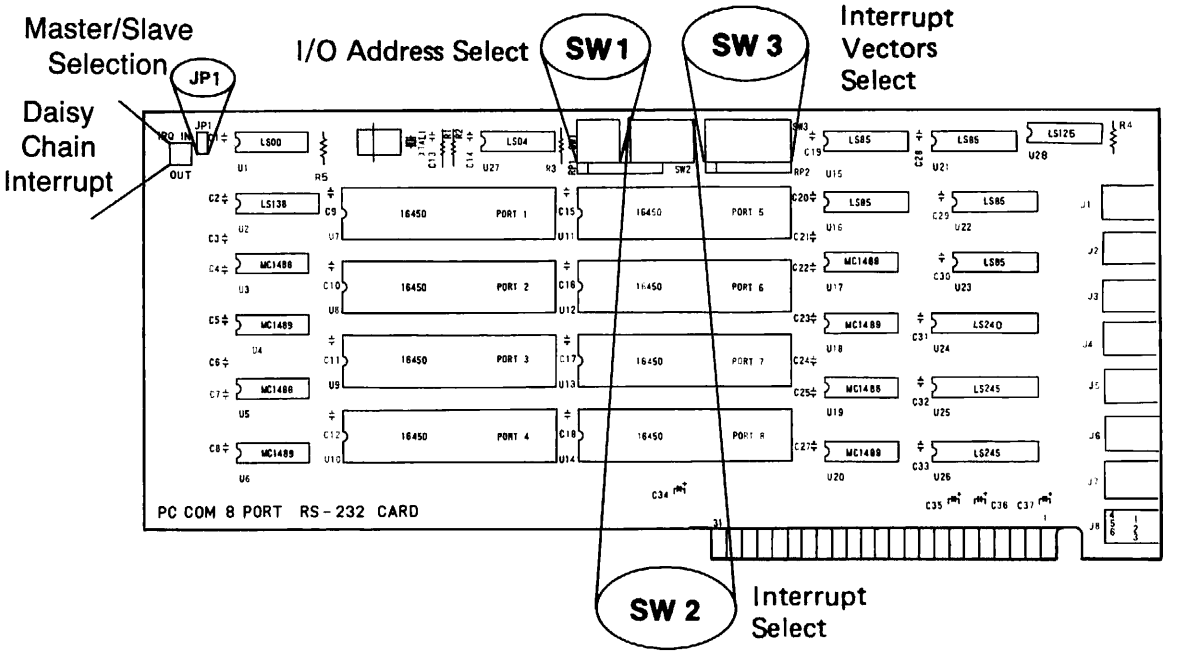
SW1 (Switch 1)
Determines the address of the UARTs [I/O address].

SW2 (Switch 2)
Selects which interrupt will be used in the range IRQ2 through IRQ7.

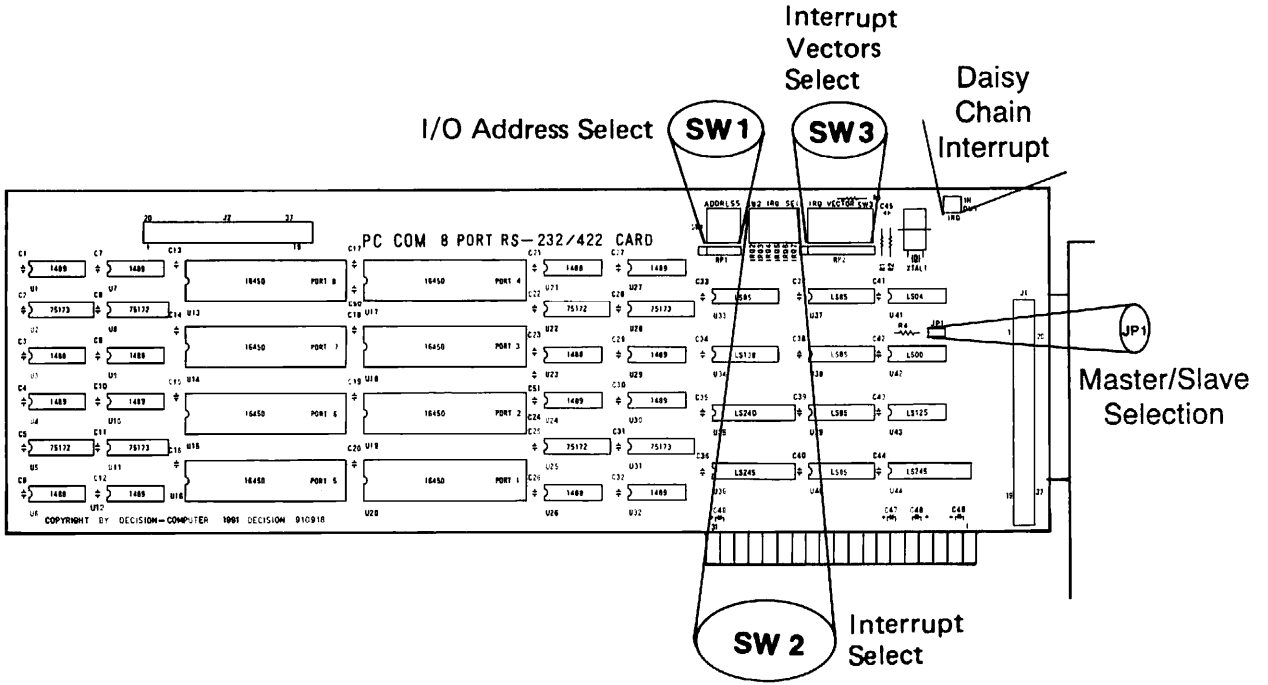
SW3 (Switch 3)
Selects the interrupt vector address and determines which port is active when an interrupt occurs.

All addresses specified are in hexadecimal. The actual interrupt latch address is set to the interrupt vector address set by switch 3 + 2H.

PC COM 8 PORT RS-232 CARD
RJ-11 BOARD



PC COM 8 PORT RS-232/422 CARD
DB37 PIN BOARD



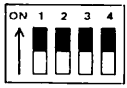
5.2 Selection of Switch Settings

It is important to refer to the user manual supplied with your operating system to determine the correct configuration. Although we provide installation advice for various operating systems, it is not possible to cover all systems in this user guide. Please contact your supplier if you have any difficulties with configuration.

IMPORTANT: CARE MUST BE TAKEN IN SELECTING THE CONFIGURATION OF SWITCHES TO ENSURE YOU DO NOT DUPLICATE SETTINGS OF OTHER EQUIPMENT ALREADY INSTALLED IN YOUR COMPUTER. DUPLICATION OF SETTINGS WILL RESULT IN A MALFUNCTION OF ONE OR BOTH DEVICES.

Please refer to the following settings for each switch block. If you are installing more than one board do not duplicate switch settings for any parameter.

I/O PORT ADDRESS (UART ADDRESS)



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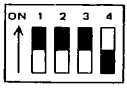

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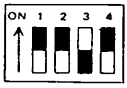

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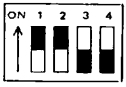

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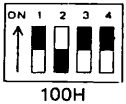
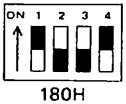


100H

140H



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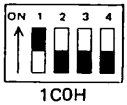
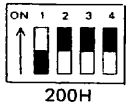
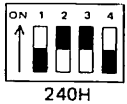


1C0H

SWITCH 1



200H



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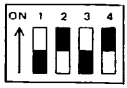

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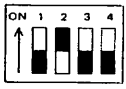
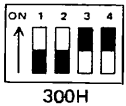


2C0H



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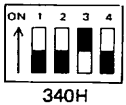

340H

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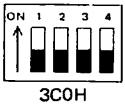
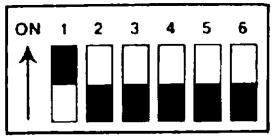


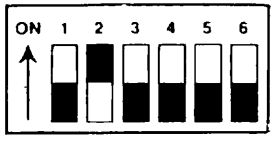
3C0H

NOTE: The address selected must start on a multiple of 40H. A block of 40H contiguous I/O locations will be used starting from the selected address.

INTERRUPT (IRQ) SWITCH 2



IRQ2



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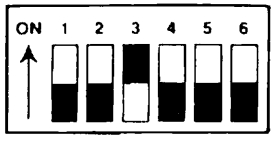

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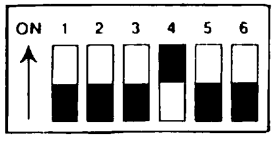

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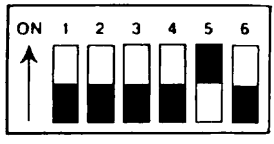

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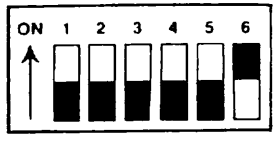
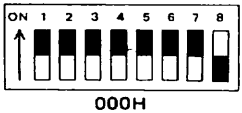


IRQ7

INTERRUPT VECTORS



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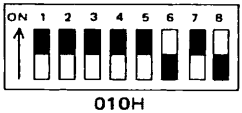

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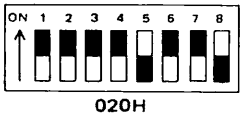

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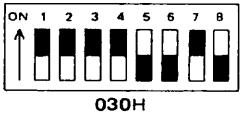

030H

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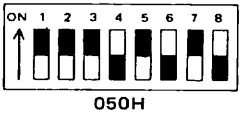

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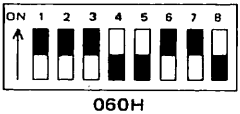

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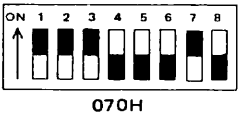
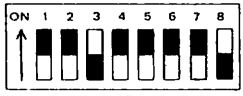


070H

SWITCH 3



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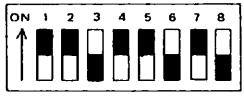

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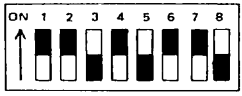

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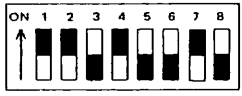

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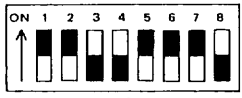

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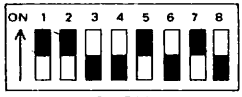

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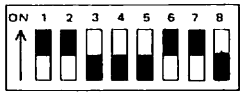

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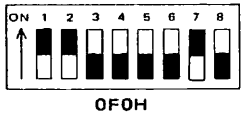

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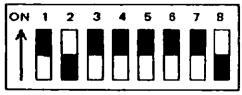

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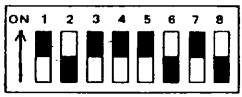

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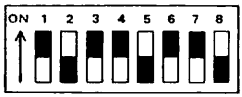

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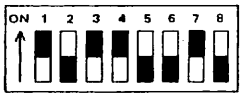

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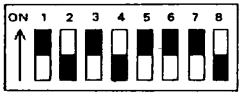

140H

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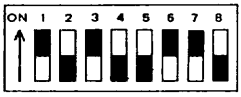

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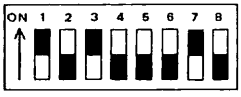

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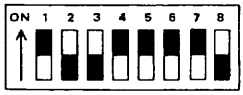
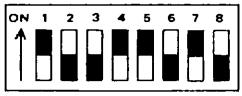
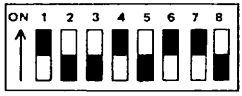


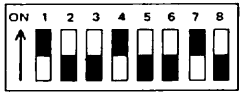
180H



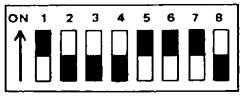
190H



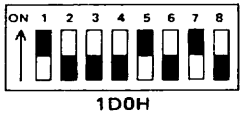
1A0H



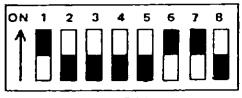
1B0H



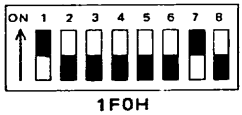
1C0H



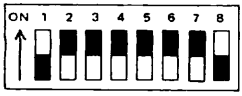
1D0H



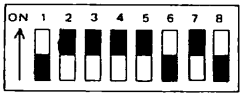
1E0H



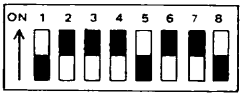
1F0H



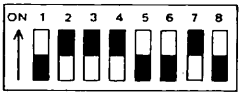
200H



210H

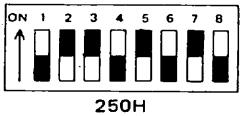


220H

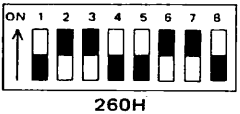


230H

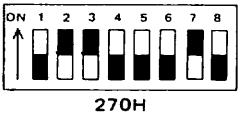
240H



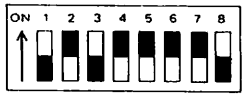
250H



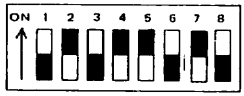
260H



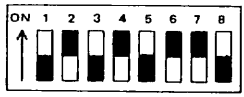
270H



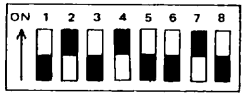
280H



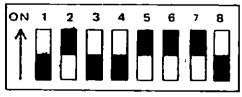
290H



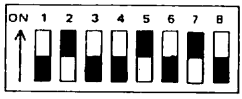
2A0H



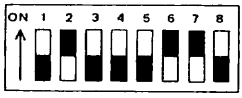
2B0H



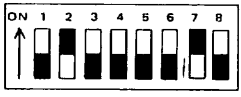
2C0H



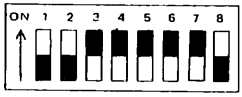
2D0H



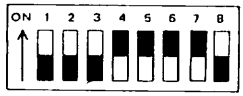
2E0H



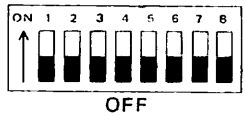
2F0H



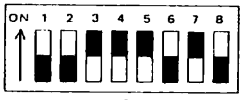
300H



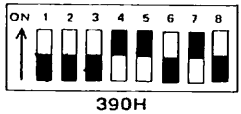
380H



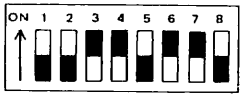
OFF



310H

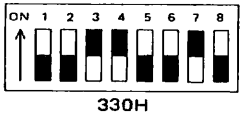


390H



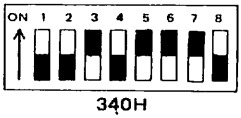
320H

3A0H

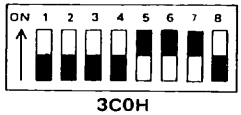


330H

3B0H

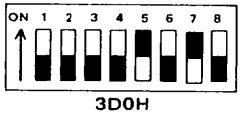


340H

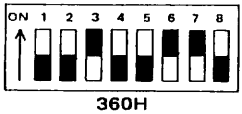


3C0H

350H

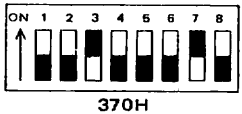


3D0H

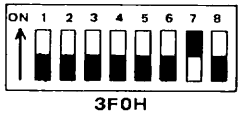


360H

3E0H



370H

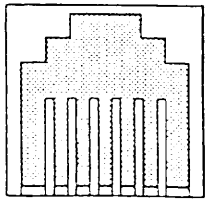


3F0H

APPENDIX A CABLING INFORMATION - RJ11

A. 1 RJ11 Connectors

The communication interface follows the EIA RS232C standard. Each RS232 port has one RJ-11 female connector for connection to a peripheral device. The board mounted female RJ-11 pin identification is shown in the following:



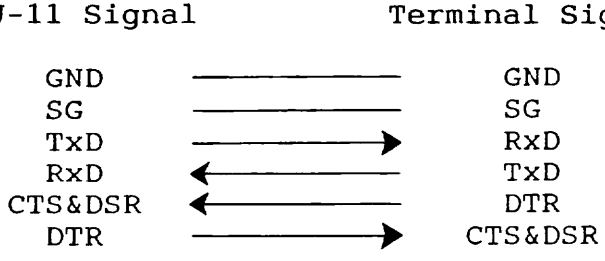
RJ-11 Pin #	Singal Name	RS-232C Name	Signal Direction
1	Chassis Ground(GND)	AA	Common
2	Signal Ground(SG)	AB	Common
3	Transmit Data(TxD)	BA	Output
4	Receive Data(RxD)	BB	Input
5	Clear to Send(CTS)	CB	Input
	Data Set Ready(DSR)	CC	Input
6	Data Terminal Ready(DTR)	CD	Output

The RJ-11 to DB25 expansion cable assignment is shown in the following:

RJ-11 Pin#	Signal	DB25 Pin#
1	GND	1
2	SG	7
3	TxD	2
4	RxD	3
5	DSR&CTS	5,6
6	DTR	20

A. 2 Cable Connections

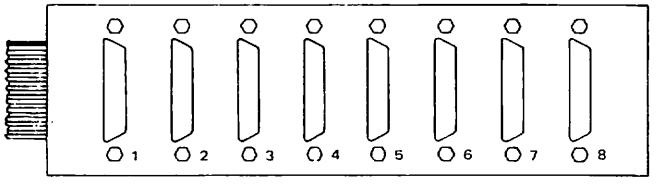
To connect PC COM 8 port adapter to other DATA TERMINAL EQUIPMENT (DTE) devices, we recommend the following connection method.



APPENDIX B RS232 CABLING INFORMATION EXPANSION BOX KIT OR DB37 KIT

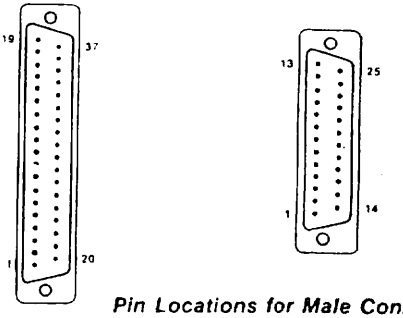
B. 1 PC COM with Expansion Box

PC COM with the expansion box provides an EIA RS232C interface with DB25 female connectors for each port.



B. 2 PC COM with DB37

The communication interface follows the EIA RS232C standard. Two special cables with a DB37 connector are provided in the package. This cable connects the signals from the DB37 connector into four standard DB25 connectors.



Pin Locations for Male Connectors.

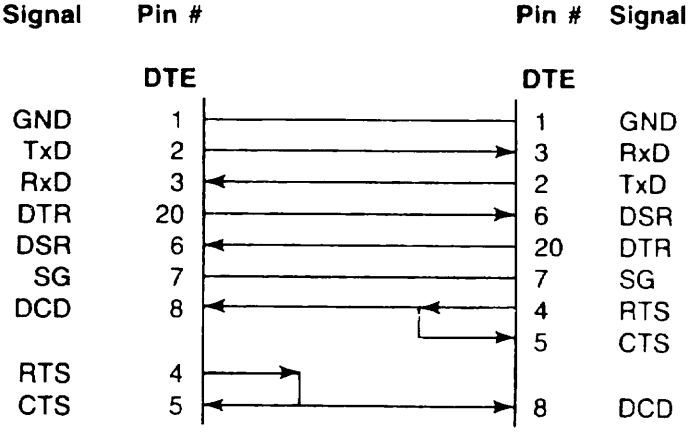
B. 3 DB25 Connectors - RS232C Type

The signal assignments for a standard DB25 connector are shown below:

DB25 Pin #	Signal Name	RS-232C Name	Signal Direction
1	Chassis Ground (GND)	AA	Common
2	Transmit Data (TxD)	BA	Output
3	Receive Data (RxD)	BB	Input
4	Request to Send (RTS)	CA	Output
5	Clear to Send (CTS)	CB	Input
6	Data Set Ready (DSR)	CC	Input
7	Signal Ground (SG)	AB	Common
8	Data Carrier Detect (DCD)*	CF	Input
20	Data Terminal Ready (DTR)	CD	Output
22	Ring Indicator (RI)	CE	Input

B. 4 Cable connections

To connect the PC COM 8 port adapter to other DATA TERMINAL EQUIPMENT (DTE) devices, we recommend using a DTE to DTE connection as shown below:



Recommended DTE-to-DTE Connection (Null Modem).

APPENDIX C RS422 CABLING INFORMATION EXPANSION BOX KIT OR DB37 KIT

C. 1 DB25 Connectors - RS422 Type

The signal assignments for a standard DB25 connector are shown in the following.

Pin	Description
7	Ground
2	Transmit Data (+)
3	Receive Data (+)
4	Request to Send (+)
5	Clear to Send (+)
20	Transmit Data (-)
22	Receive Data (-)
8	Request to Send (-)
9	Clear to Send (-)

* The symbol '+' represents a transmit current.

* The symbol '-' represents a receive current.

C. 2 Cable Connections

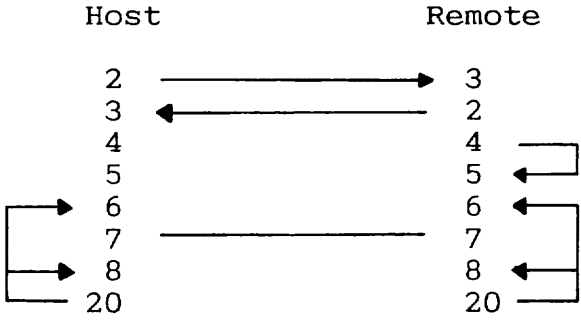
To connect RS422 ports to other DATA TERMINAL EQUIPMENT (DTE) devices, we recommend the use of DTE to DTE configuration which is shown as follows.

HOST PC RS422	REMOTE PC RS422
Ground	Ground
Transmit Data(+)	Receive Data(+)
Receive data(+)	Transmit data(+)
Request to Send(+)	Clear to Send(+)
Clear to Send(+)	Request to Send(+)
Transmit Data(-)	Receive Data(-)
Receive Data(-)	Transmit Data(-)
Request to Send(-)	Clear to Send(-)
Clear to Send(-)	Request to Send(-)

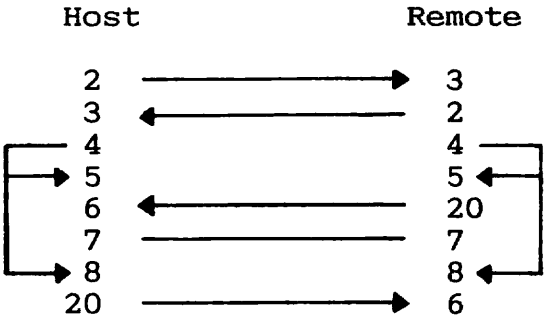
APPENDIX D NULL MODEM AND CABLE

D. 1 Null Modem Connections: RS232

If the software supplier or operating system does not specify a particular cable configuration, we recommend you use the following "null modem" cable when XON/XOFF is utilized.



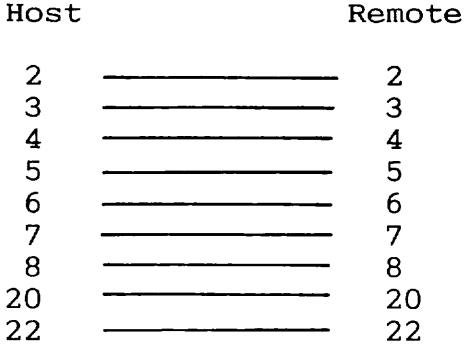
If hardware handshaking is necessary use the following cable:



Some serial devices have the buffer control signal on pin 19, in which case pin 6 on the host is connected to pin 19 on the remote device.

D. 2 Modem Connections

A straight through cable is required, e.g. pin 2 to pin 2, pin 3 to pin 3, etc.

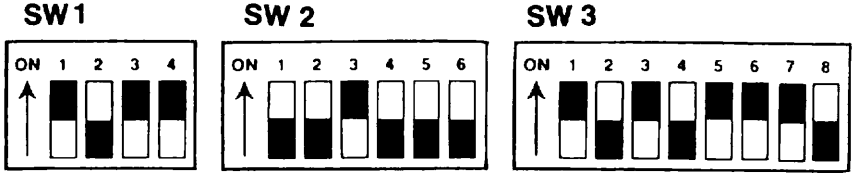


APPENDIX E SCO XENIX CONFIGURATION

E. 1 Device Mapping

1. Primary adapter

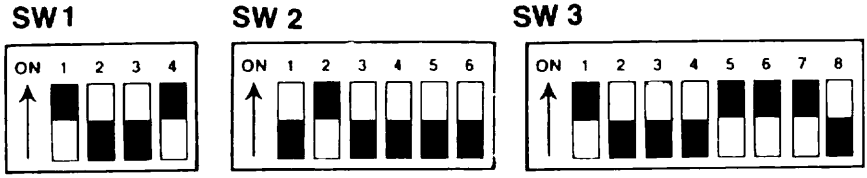
   Using primary adapter as COM1:
   I/O address is 100H
   Interrupt vector is 140H
   Interrupt is IRQ4



Port	Address	Device	Modem
1	100H	/dev/tty1a	/dev/tty1A
2	108H	/dev/tty1b	/dev/tty1B
3	110H	/dev/tty1c	/dev/tty1C
4	118H	/dev/tty1d	/dev/tty1D
5	120H	/dev/tty1e	/dev/tty1E
6	128H	/dev/tty1f	/dev/tty1F
7	130H	/dev/tty1g	/dev/tty1G
8	138H	/dev/tty1h	/dev/tty1H

2. Secondary adapter

Using secondary adapter as COM2:
I/O address is 180H
Interrupt vector is 1C0H
Interrupt is IRQ3



Port	Address	Device	Modem
1	180H	/dev/tty2a	/dev/tty2A
2	188H	/dev/tty2b	/dev/tty2B
3	190H	/dev/tty2c	/dev/tty2C
4	198H	/dev/tty2d	/dev/tty2D
5	1A0H	/dev/tty2e	/dev/tty2E
6	1A8H	/dev/tty2f	/dev/tty2F
7	1B0H	/dev/tty2g	/dev/tty2G
8	1B8H	/dev/tty2h	/dev/tty2H

Under the SCO XENIX operating system, the primary adapter is configured so that all ports interrupt on IRQ4. If a secondary adapter is used, it should be configured to interrupt IRQ3.

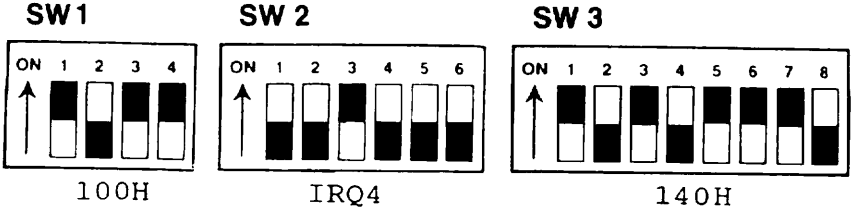
E. 2 Installation for SCO XENIX

After the hardware configuration is set, please install the software drivers. The installation procedure is described as follows:

1. Select interrupt level

The first PC COM 8 port serial adapter should be strapped at interrupt 4 (COM1:). The second PC COM 8 port serial adapter should be set to IRQ3 which corresponds to COM2.

A. Primary adapter



B. Secondary adapter

2. Enter system maintenance mode

Boot the XENIX operating system then enter system maintenance mode.

3. Install serial port

Type

```
# mkdev serial
```

4. The screen will display:

```
You would like to install a
      1. 1 port card
      2. 2 port card
      3. 4 port card
      4. 5 port card
      5. 8 port card
Select an option or enter 'q' to quit:
```

Enter number 5 then press return.

5. The screen will display:

```
    The card is configured as:
          1. COM1
          2. COM2
          3. COM3
          3. COM4
    Select an option or enter 'h' for help or
'q' to quit:
```

Enter number 1 and press return, the system will configure eight serial ports for the primary adapter. These eight ports are tty1a, tty1b, tty1c, tty1d, tty1e, tty1f, tty1g, tty1h.

If you install a secondary adapter, repeat step 3 to 5 and enter number 2 to select the COM2 configuration. The system will then configure another eight serial ports: tty2a, tty2b, tty2c, tty2d, tty2e, tty2f, tty2g, tty2h.

6. Enable sixteen serial ports

Enable each serial port by using the

'enable' command. Please type

```
# enable tty1a
# enable tty1b
# enable tty1c
# enable tty1d
# enable tty1e
# enable tty1f
# enable tty1g
# enable tty1h
# enable tty2a
# enable tty2b
# enable tty2c
# enable tty2d
# enable tty2e
# enable tty2f
# enable tty2g
# enable tty2h
```

7. Connect each terminal to an RJ11 or DB25 connector.

APPENDIX F P.C COM DIAGNOSTICS UNDER MS/DOS

F. 1 Diagnostic Under MS/DOS

The SUPER program provides a diagnostic routine to test your PC COM 8 port serial adapter under MS/DOS. It provides internal and external tests. A loopback plug must be connected to each port being tested. Pins 2 (TxD) and 3 (Rxd) must be shorted together in the plug.

To test your PC COM 8 port serial adapter under MS/DOS, please type

A>SUPER

(A> means system prompt)

the screen will display:

SUPER eight RS232C diagnostic.
Please make sure a loopback plug be connected!
Input delay cycle? (386=4000, AT=1000, XT=600)

For an XT, you may type a number larger than 600. For an AT or 386, you may type a number larger than 1000. The number is dependent on your machine cycle. If your machine cycle is very fast, type a larger number to synchronize the I/O speed of the 16450 chips.

F. 2 PC COM Software

The PC COM software provides device drivers, library routines, and virtual terminal programs under MS/DOS. Please see PC COM software manual for more details.

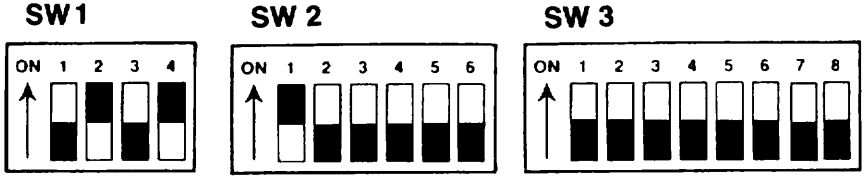
APPENDIX G MULTILINK CONFIGURATION

Modify I/O port addresses by typing

mlcustom mlink.com

when the menu appears, select option 1 to change port addresses. Modify the I/O port addresses of your PC COM 8 port adapter as follows:

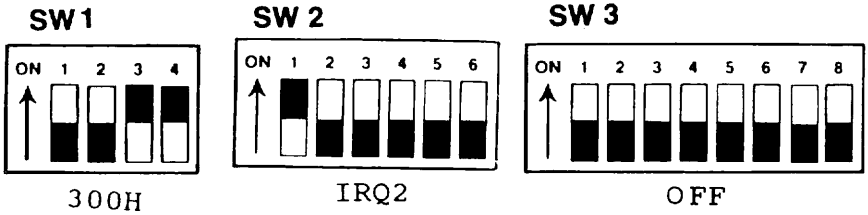
port 1	280H
port 2	288H
port 3	290H
port 4	298H
port 5	2A0H
port 6	2A8H
port 7	2B0H
port 8	2B8H



280H IRQ2 OFF

If an additional PC COM 8 port serial adapter is installed, then

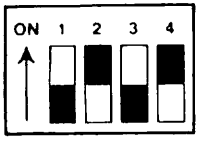
port 9	300H
port 10	308H
port 11	310H
port 12	318H
port 13	320H
port 14	328H
port 15	330H
port 16	338H



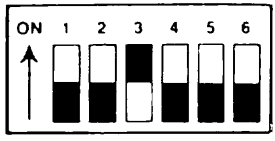
APPENDIX H PICK CONFIGURATION

Refer to PICK user installation guide for more information. If selecting IRQ3 or IRQ4 be sure to disable existing COM1 or COM2 ports.

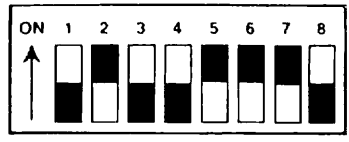
1. First adapter



280H

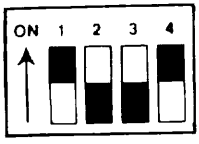


IRQ4

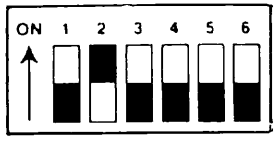


2C0H

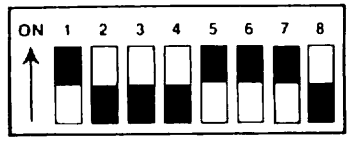
2. Second adapter



180 H

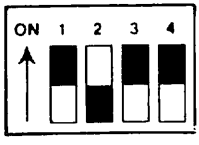


IRQ3

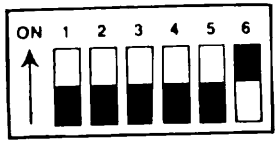


1C0H

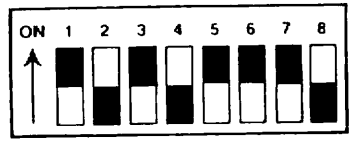
3. Third adapter



100H

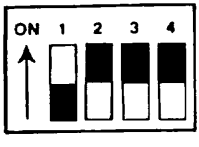


IRQ7

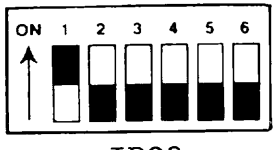


140H

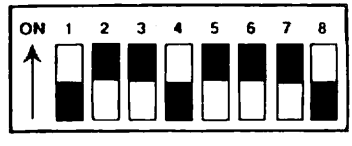
4. Fourth adapter



200H



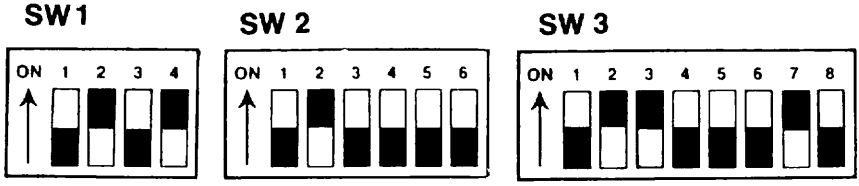
IRQ2



240H

APPENDIX I CONCURRENT DOS CONFIGURATION
MULTI-USER (DR.) DOS CONFIGURATION

Set I/O port address to 280H, interrupt to IRQ3, and interrupt vector to 270H.



280H IRQ3 270H

To install device drivers, please run the SETUP program, then follow the menu instructions to set up I/O port address, communication parameters (such as: baud rate, parity, data bits, ... etc.), and handshaking.

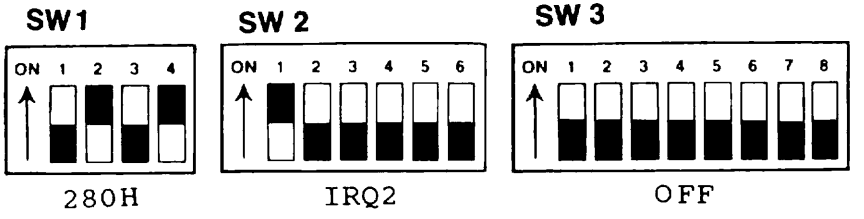
For multi-user DOS (Dr. DOS) configuration, please set I/O port address to 280H, and interrupt vector to 270H. Any interrupt (IRQ3 to IRQ7) is used.

APPENDIX J PC-MOS/386 CONFIGURATION

J. 1 Hardware configuration

You may set arbitrary I/O addresses, interrupt, and interrupt vectors. However, we suggest you use as follows:

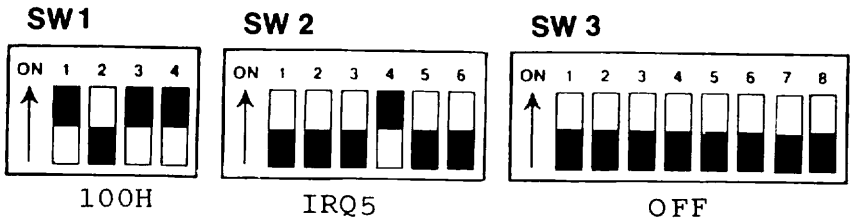
I/O port address = 280H
Interrupt = IRQ2
Interrupt vector = OFF



280H IRQ2 OFF

If an additional PC COM 8 port adapter is installed, then set

I/O port address = 100H
Interrupt = IRQ5
Interrupt vector = OFF



100H IRQ5 OFF

J. 2 Software installation

We assume the eight I/O port addresses are 280H, 288H, 290H, 298H, 2A0H, 2A8H, 2B0H, and 2B8H. The interrupt is set to IRQ2. We also assume your PC-MOS/386 can support more than 9 users.

a. Prepare CONFIG.SYS file

The contents of CONFIG.SYS includes

```
DEVICE = 52TERM.SYS
DEVICE = $SERIAL.SYS  /AD=280,HS=X,IN=2 ~
                      /AD=288,HS=X,IN=2 ~
                      /AD=290,HS=X,IN=2 ~
                      /AD=298,HS=X,IN=2 ~
                      /AD=2A0,HS=X,IN=2 ~
                      /AD=2A8,HS=X,IN=2 ~
                      /AD=2B0,HS=X,IN=2 ~
                      /AD=2B8,HS=X,IN=2
```

There are several serial device drivers supported by PC-MOS/386. You must select the device driver according to the terminal type connected. In this example, we use a VT52 as the terminal device. The following device drivers are supported by PC-MOS/386.

PCTERM:
For PC type terminals, Ampex 232, Emulink software, Falco 5500, Kimtron KT-7

PC, Link Technologies MC1, MC3 and PCterm, Televideo PCS1, and Wyse Wy-60.

TTTERM:
For Teletype type terminals.

AVTERM:
For ADDS Viewpoint type terminals.

3ATERM:
ADM 3A.

T1TERM:
Televideo 910.

52TERM:
DEC VT-52.

31TERM:
IBM 3101.

19TERM:
Zenith Z-19.

TVTERM:
Televideo 912C, 920C, 925.

EXTERM:
Excel 42/44.

ANTERM:
ANSI terminals.

After the device driver is declared, you must enter your I/O port addresses,

handshaking protocol, and interrupt. In this example, I/O port addresses are 280H, 288H, 290H, 298H, 2A0H, 2A8H, 2B0H, and 2B8H, and handshaking protocol is set to X (receiver controlled on and off). Interrupt level is set to IRQ2. Where '~' tells MOS that the next line is a continuation of the attributes. We explain each parameter setting in the following:

AD= : the port address.
HS= : handshaking protocol, can be set to
N - None.
D - DTR.
X - XOFF.
P - XPC.
R - results in DTR, XPC, and RTS.
IN= : interrupt level.

b. Prepare AUTOEXEC.BAT file

The contents of AUTOEXEC.BAT file includes

```
ADDTASK 32K,1,,TTY1,52TERM,1,9600
ADDTASK 32K,2,,TTY2,52TERM,2,9600
ADDTASK 32K,3,,TTY3,52TERM,3,9600
ADDTASK 32K,4,,TTY4,52TERM,4,9600
ADDTASK 32K,5,,TTY5,52TERM,5,9600
ADDTASK 32K,6,,TTY6,52TERM,6,9600
ADDTASK 32K,7,,TTY7,52TERM,7,9600
ADDTASK 32K,8,,TTY8,52TERM,8,9600
MOS SERINIT 1,9600,N,8,1
```

```
MOS SERINIT 2,9600,N,8,1
MOS SERINIT 3,9600,N,8,1
MOS SERINIT 4,9600,N,8,1
MOS SERINIT 5,9600,N,8,1
MOS SERINIT 6,9600,N,8,1
MOS SERINIT 7,9600,N,8,1
MOS SERINIT 8,9600,N,8,1
```

If you have multi-user capability, you must use the ADDTASK command to create user partitions. The ADDTASK command may be included in the AUTOEXEC.BAT file to add users when you boot the computer automatically. The syntatic specification of ADDTASK is:

```
ADDTASK memsizeK,{task ID},{class},{startup},
        term ID,port,baud rate
```

memsize :

Enter the amount of memory you want to allocate to the user, it must be at least 32K. The memory size should be large enough to facilitate whatever applications are to be run in the partition.

task ID :

Enter up to two digits for the task number to assign to the partition. Zero is reserved for the partition in base memory.

class :

Enter the security class.

startup :
enter up to eight characters for the name of a startup batch file for the task.

term ID :
Enter device driver name, which is specified in the step a.

port :
Enter the number of the serial port to which a terminal for this partition is connected.

baud rate :
Enter the baud rate for the serial port.

In this example, we add eight serial ports in the system and each memory partition occupies 32K bytes of memory. When we turn on the first terminal (I/O port address 280H), it will run the auto execution file which is TTY1.BAT. The task ID of the first terminal is 1.

After we create a user partition with the ADDTASK command, we must set the communication parameters for the serial ports. The MOS SERINIT command is used to specify communication parameters, which are described as follows:

MOS SERINIT n,r,p,b,s

n - the I/O port number.
r - the baud rate.
p - the parity may be N(None), E(Even), or O(Odd).
b - the number of data bits.
s - the number of stop bits.

In this example, we set no parity, baud rate = 9600, 8 data bits, and 1 stop bit.

3. Terminal setup

Suppose you use PC and VTERM software to emulate VT52, you must press CTRL \ (which represents ESC), then press B, which will refresh the bottom 24 lines (lines 2 through 25) of the display on the video screen of a terminal. Otherwise, your cursor may disappear.

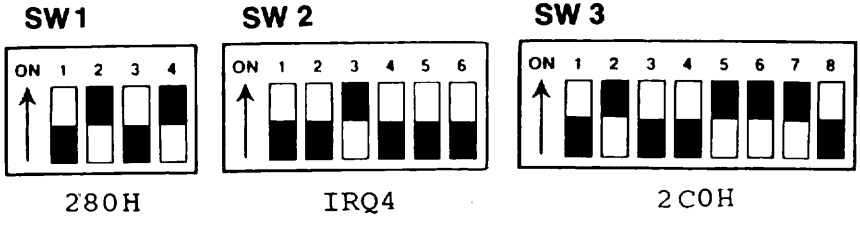
APPENDIX K IBM XENIX CONFIGURATION

K. 1 Hardware Configuration

Under the IBM XENIX operating system, a maximum of four adapters can be added to the PC/AT, PC/386, or compatible to provide thirty two ports. The hardware configuration is shown in the following:

1. first adapter

I/O port address: 280H
Interrupt level : IRQ4
Interrupt vector: 2C0H

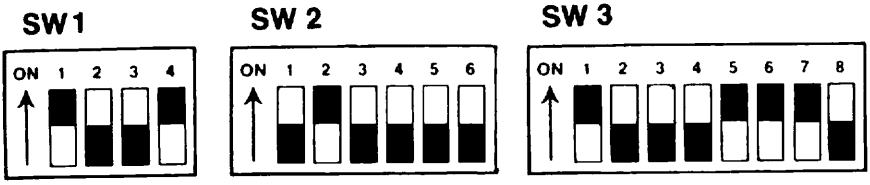


280H IRQ4 2C0H

port	device name
1	/dev/tty02
2	/dev/tty03
3	/dev/tty04
4	/dev/tty05
5	/dev/tty06
6	/dev/tty07
7	/dev/tty08
8	/dev/tty09

2. second adapter

I/O port address: 180H
Interrupt level : IRQ3
Interrupt vector: 1C0H

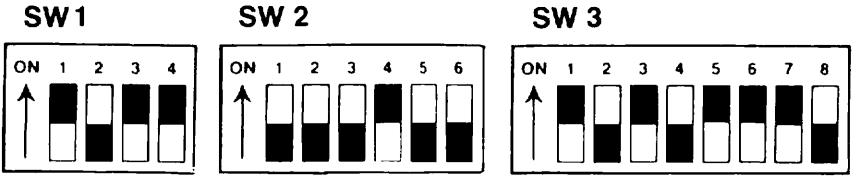


180 H IRQ3 1C0 H

port	device name
1	/dev/tty12
2	/dev/tty13
3	/dev/tty14
4	/dev/tty15
5	/dev/tty16
6	/dev/tty17
7	/dev/tty18
8	/dev/tty19

3. third adapter

I/O port address: 100H
Interrupt level : IRQ5
Interrupt vector: 140H

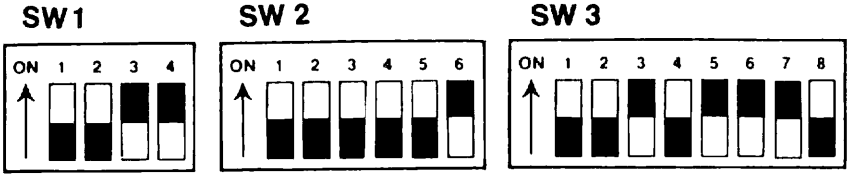


100H IRQ5 140H

port	device name
1	/dev/tty22
2	/dev/tty23
3	/dev/tty24
4	/dev/tty25
5	/dev/tty26
6	/dev/tty27
7	/dev/tty28
8	/dev/tty29

4. fourth adapter

I/O port address: 300H
Interrupt level : IRQ7
Interrupt vector: 340H



300H IRQ7 340H

port	device name
1	/dev/tty32
2	/dev/tty33
3	/dev/tty34
4	/dev/tty35
5	/dev/tty36
6	/dev/tty37
7	/dev/tty38
8	/dev/tty39

K. 2 Installation for the IBM XENIX Operating System

The installation procedure for the device drivers is described as follows:

1. Login as a root user.

2. Create a temporary directory and change default to this directory. Please type

```
# mkdir   /usr/temp
# cd      /usr/temp
```

(where # is the system prompt)

3. Insert distribution diskette (which contains device drivers) into floppy disk drive A:, then copy the files from the distribution diskette to a temporary directory.

Step 1: Copy batch file to /usr/temp, please type

```
#doscp -r A:/copy .
#chmod 0755 copy
```

Step 2: Copy device drivers to the temporary directory, please type

#./copy

4. To install device drivers, please type:

./setup

The setup program will ask you

How many adapters are installed (1,2,3,4):

After you answer, the system will take about four minutes to install the device drivers. After installation, the old kernel is renamed as XENIX.SAVE, and the new system kernel is installed as XENIX.

5. Reboot the system. Now, your new XENIX system which includes device drivers is activated.

6. Enable each terminal by using the enable command. Please type

```
# enable  /dev/tty02
# enable  /dev/tty03
          .
          .
          .
          .
# enable  /dev/tty39
```

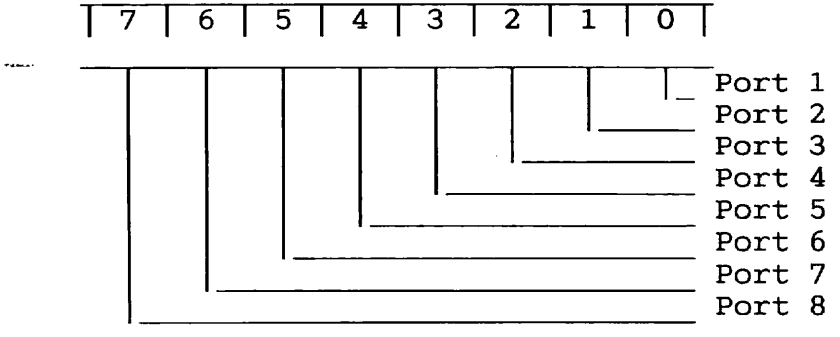
7. Connect each terminal to RJ-11 or DB25 connector.

NOTE: If the new system fails to reboot, boot the original system using the command:

```
# hd /XENIX.SAVE
```

APPENDIX L INTERRUPT LATCH ADDRESS

The interrupt latch address is used to detect which of the eight channels is creating the interrupt. The interrupt latch address is set to the interrupt vector address + 2H. The relationship between each port corresponds to the interrupt indicator as shown in the following. When the corresponding bit is 0, an interrupt occurred, otherwise if the bit is 1, then no interrupt occurred.



The interrupt vector must start on a multiple of 10H.

APPENDIX M DAISY CHAIN INTERRUPT

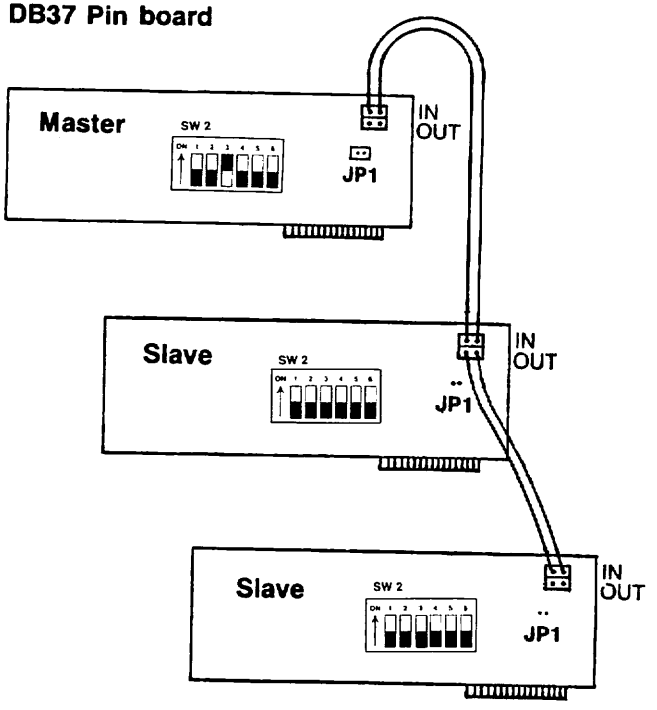
The daisy chain interrupt function provides more than one PC COM 8 port board to use common interrupt.

The JP1 is used to identify master or slave board, and the IN / OUT jumper is used to connect daisy chain.

JP1 : Select master or slave

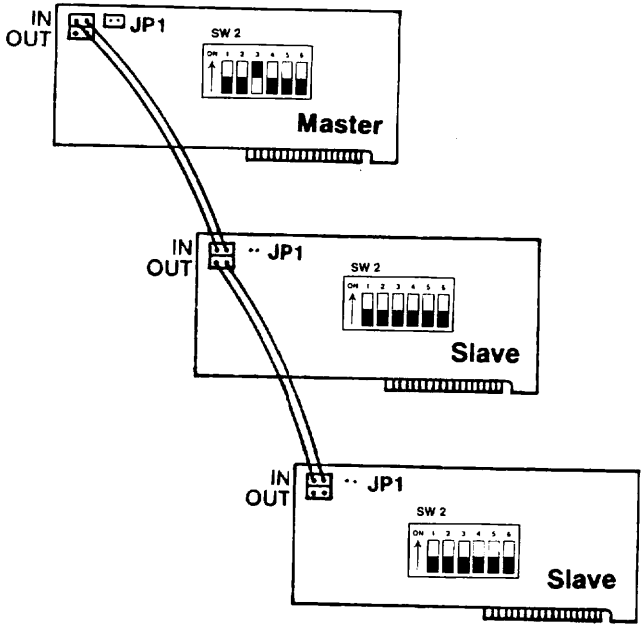
JP1	board
short	master
open	slave

Suppose you use one interrupt line to 24 ports, you must select one board as master board which generate interrupt, and the other two boards are slave. We show how to connect daisy chain interrupt in the following.



Please note that, when the daisy chain function is used, only set interrupt (switch 2) on master board, do not set IRQ on slave board.

RJ-11 board



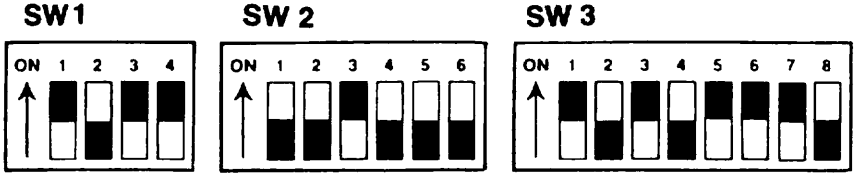
APPENDIX N AT&T UNIX CONFIGURATION
INTERACTIVE UNIX CONFIGURATION

N.1 Hardware Configuration

For AT&T UNIX and INTERACTIVE UNIX, the special device drivers are provided on the distribution diskette. The hardware configurations are shown in the following. For the PC COM 8 port card, only IRQ4 and IRQ3 are selected.

1. first adapter

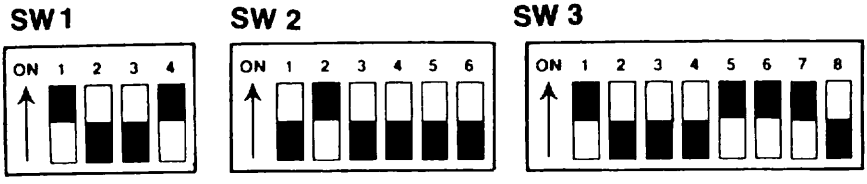
I/O port address: 100H
Interrupt level : IRQ4
Interrupt vector: 140H



port	device name	MODEM name
1	/dev/ttyj31	/dev/ttyJ31
2	/dev/ttyj32	/dev/ttyJ32
3	/dev/ttyj33	/dev/ttyJ33
4	/dev/ttyj34	/dev/ttyJ34
5	/dev/ttyj35	/dev/ttyJ35
6	/dev/ttyj36	/dev/ttyJ36
7	/dev/ttyj37	/dev/ttyJ37
8	/dev/ttyj38	/dev/ttyJ38

2. second adapter

I/O port address: 180H
Interrupt level : IRQ3
Interrupt vector: 1C0H



port	device name	MODEM name
1	/dev/ttyj41	/dev/ttyJ41
2	/dev/ttyj42	/dev/ttyJ42
3	/dev/ttyj43	/dev/ttyJ43
4	/dev/ttyj44	/dev/ttyJ44
5	/dev/ttyj45	/dev/ttyJ45
6	/dev/ttyj46	/dev/ttyJ46
7	/dev/ttyj47	/dev/ttyJ47
8	/dev/ttyj48	/dev/ttyJ48

N.2 Software Installation

The installation procedure for the device drivers is described as follows:

1. Login as a root user.

2. Backup original UNIX kernel, please type

```
# cd /
# cp /unix  /unix.bck
```

3. Insert distribution diskette (which contains device drivers) into floppy disk drive A:, then copy the files from the distribution diskette to a temporary directory.

```
#tar xvf /dev/fd048ds9 ./PC_COM
```

4. To install device drivers, please type:

```
# cd /PC_COM
# sh setup
```

The setup program will ask you

1. How many adapters are installed.
2. Which IRQ are selected.
3. Communication parameters.

After answer the above questions, then the script will prompt you with:

The UNIX Operating System will now be rebuilt. Please wait ...

5. Reboot the system. Now, your new UNIX system which includes device drivers is activated.

6. Enable each terminal by using the entty command. Please type

```
# entty   ttyj11
# entty   ttyj12
        .
        .
        .
        .
```

7. Connect each terminal to DB25 connector.

NOTE

1. If the new system fails to reboot, please boot the original system. For interactive UNIX, when system is boot, please press return key to halt autoboot, then type

```
# unix.bck
```

For AT&T UNIX, please modify AUTOBOOT=NO parameter from /etc/default/boot file, then type

```
# unix.bck
```

Please note that, before you install your distribution disk, you need modify AUTOBOOT parameter.

2. To remove device driver from UNIX, please type

```
# cd /PC_COM
# sh remove
```

3. After installation, please enable each port by entty command and disable port by distty command.

4. To change baud rate, please update /etc/inittab and /etc/conf/cf.d/init.base files.

5. To use local printer (connect auxiliary port from terminal), please check your terminal manual to send leading code to control your terminal to bypass data to printer.

APPENDIX O FIFO CHIPS FOR MULTI-USER DOS

To use the FIFO chips and FIFO driver under multi-user DOS (Dr. DOS), please note us for extra charge. The DRMDOS driver provides up to 2 cards in the system. It uses the external driver (generic) to drive 16550 chips with FIFO. Before use the DRM16.SYS driver, please insert protect key (dongles) into your printer adapter. Under Dr. DOS, please use daisy chain configuration.

The communication protocol are

1. None
2. XON/XOFF
3. DTR/DSR
4. CTS/RTS

The installation procedures are shown in the following.

1. Copy DRM16.SYS file from distribution disk into /OSUTILS directory.

```
C:> copy A:DRM16.SYS C:\OSUTILS
```

2. Add command into CConfig.SYS file.

```
DEVICE=C:\OSUTILS\DRM16.SYS/Mxxx,yyy/Sxxx,
yyy/In
```

M for master board
S for second board
I for IRQ
xxx for I/O port address (Hex)
yyy for interrupt vector (Hex)
[the driver add 2 automatically]
n for IRQ2 to IRQ7

The default setting is

/M180,1C0/S280,2C0/I5

3. To use setup program to setup serial ports. The setup program is provides from multi-user DOS. please note that, you must select

    1. Generic (own driver)
    2. 16 ports
    3. PC terminal

    when you setup system.

4. Reboot the system.

APPENDIX P FIFO CHIPS FOR UNIX

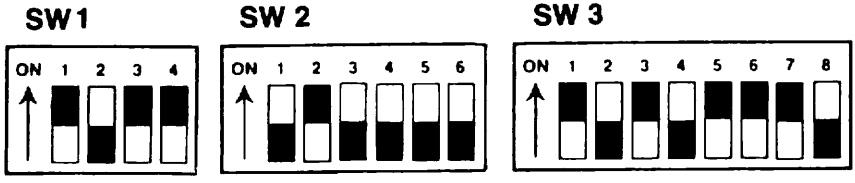
To use the FIFO chips and FIFO driver under UNIX/XENIX operating system, please note us for extra charge. The UNIX/XENIX drivers are used to drive 16550 chips with FIFO. Before use the device driver, please insert protect key (dongles) into your printer adapter.

We provides SCO, AT&T, and INTERACTIVE UNIX/XENIX drivers in the distribution disk. For UNIX system, the hardware configuration and software installation procedures are the same as APPENDIX N, please refer it.

For SCO XENIX system, the hardware configuration is shown in the below and the software installation procedure is the same as APPENDIX N.

1. first adapter

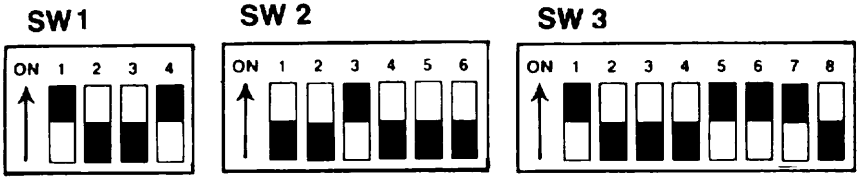
I/O port address: 100H
Interrupt level : IRQ3
Interrupt vector: 140H



port	device name	MODEM name
1	/dev/ttyj31	/dev/ttyJ31
2	/dev/ttyj32	/dev/ttyJ32
3	/dev/ttyj33	/dev/ttyJ33
4	/dev/ttyj34	/dev/ttyJ34
5	/dev/ttyj35	/dev/ttyJ35
6	/dev/ttyj36	/dev/ttyJ36
7	/dev/ttyj37	/dev/ttyJ37
8	/dev/ttyj38	/dev/ttyJ38

2. second adapter

I/O port address: 180H
Interrupt level : IRQ4
Interrupt vector: 1C0H



port	device name	MODEM name
1	/dev/ttyj41	/dev/ttyJ41
2	/dev/ttyj42	/dev/ttyJ42
3	/dev/ttyj43	/dev/ttyJ43
4	/dev/ttyj44	/dev/ttyJ44
5	/dev/ttyj45	/dev/ttyJ45
6	/dev/ttyj46	/dev/ttyJ46
7	/dev/ttyj47	/dev/ttyJ47
8	/dev/ttyj48	/dev/ttyJ48

To enable the I/O port under SCO operating system, please use enable command which is provided by SCO system (DO NOT USE entty COMMAND which is used under AT&T and INTERACTIVE UNIX). Also use disable command to disable the I/O port under SCO operating system.

APPENDIX Q WARRANTY INFORMATION

Q.1 Copyright

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PC COM warrants that for a period of one year from the date of purchase (unless otherwise specified in the warranty card) that the goods supplied will perform according to the specifications defined in the user manual. Furthermore that the PC COM product will be supplied free from defects in materials and workmanship and be fully functional under normal usage.

In the event of the failure of a PC COM product within the specified warranty period, PC COM will, at its option, replace or repair the item at no additional charge. This limited warranty does not cover damage resulting from incorrect use, electrical interference, accident, or modification of the product.

All goods returned for warranty repair must have the serial number intact. Goods without serial numbers attached will not be covered by the warranty.

Transportation costs for goods returned must be paid by the purchaser. Repaired goods will be dispatched at the expense of PC COM.

To ensure that your PC COM product is

covered by the warranty provisions, it is necessary that you return the Warranty card.

Under this Limited Warranty, PC COM's obligations will be limited to repair or replacement only, of goods found to be defective as specified above during the warranty period. PC COM is not liable to the purchaser for any damages or losses of any kind, through the use of, or inability to use, the PC COM product.

PC COM reserves the right to determine what constitutes warranty repair or replacement.

Return Authorization: It is necessary that any returned goods are clearly marked with an RA number that has been issued by PC COM. Goods returned without this authorization will not be attended to.

NOTE:

NOTE:

NOTE:

NOTE:

NOTE:

NOTE:

NOTE:

NOTE: THIS EQUIPMENT HAS BEEN TESTED AND FOUND TO COMPLY WITH THE LIMITS FOR A CLASS A DIGITAL DEVICE, PURSUANT TO PART 15 OF THE FCC RULES. THESE LIMITS ARE DESIGNED TO PROVIDE REASONABLE PROTECTION AGAINST HARMFUL INTERFERENCE WHEN THE EQUIPMENT IS OPERATED IN A COMMERCIAL ENVIRONMENT. THIS EQUIPMENT GENERATES, USES, AND CAN RADIATE RADIO FREQUENCY ENERGY AND, IF NOT INSTALLED AND USED IN ACCORDANCE WITH THE INSTRUCTION MANUAL, MAY CAUSE HARMFUL INTERFERENCE TO RADIO COMMUNICATIONS. OPERATION OF THIS EQUIPMENT IN A RESIDENTIAL AREA IS LIKELY TO CAUSE HARMFUL INTERFERENCE IN WHICH CASE THE USER WILL BE REQUIRED TO CORRECT THE INTERFERENCE AT HIS OWN EXPENSE.